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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/481,351	01/12/2000	DAVID R. PAYNE	082380-00339	5540

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EXAMINER
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ADDIE, RAYMOND W

ART UNIT	PAPER NUMBER
3673	

DATE MAILED: 01/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/481,351	PAYNE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Raymond W. Addie	3673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 12 October 2001.

2a) This action is **FINAL**.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-11,21 and 23-56 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-11,21 and 23-56 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

- Certified copies of the priority documents have been received.
- Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
- Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u> .	6) <input type="checkbox"/> Other: _____

**DETAILED ACTION**

***Election/Restrictions***

Claims 12-10, 22 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1, is rejected under 35 U.S.C. 102(b) as being anticipated by Ward et al. # 5,182,516.

Ward et al. Discloses a horizontal drilling system comprising:

A horizontal drilling machine (12).

A drill string (20) having a 1<sup>st</sup> and 2<sup>nd</sup> end.

A drive system (14, 16) operatively connectable to the 1<sup>st</sup> end of the drill string. Said Drive system being adapted to advance the drill string through the earth.

A down hole tool (10) connectable to the 2<sup>nd</sup> end of the drill string.

A machine control system (24) adapted to operate the drilling machine. Said control system further comprising:

A plurality of sensors (22, 40, 50). Each sensor positioned to sense data

relative to at least one of a plurality of parameters defining the operation of the drilling machine.

A main control circuit (81, 102) adapted to receive data from the plurality of sensors and to automatically operate the drilling machine in response to the data.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-3, 7-11, 21, 23-25, 28-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Terry et al. # 6,296,066 B1.

Terry et al. discloses a well system comprising:

A horizontal drilling machine (10) further comprising:

A drill string (20).

A drive system (90,120) operatively connectable to a 1<sup>st</sup> end of the drill string and able to advance the drill string through the earth.

A down hole tool (30) connectable to a 2<sup>nd</sup> end of the drill string.

A machine control system (21) adapted to operate the drilling machine.

Said control system comprising:

A plurality of sensors (44) each sensor positioned to sense data relative to at least one of a plurality of parameters defining the operation of the drilling machine.

A main control circuit (110) able to receive data from the plurality of sensors and to automatically operate the drilling machine in response to the data.

See col. 7; col. 9, lines 24-32, col. 10, lines 38-67, col. 22, lines 41-52, col. 23.

In regards to claim 2, Terry et al. discloses a pipe handling system adapted to extend the drill string. As well as a plurality of pipe handling sensors and pipe handling control circuitry to operate the pipe handling system. See col. 23, lines 12-55.

In regards to Claim 3, Terry et al. discloses the use of pipe sections connectable at threaded pipe joints. See col. 12, lines 12-28.

In regards to Claims 7-11, 32-42 Terry et al. discloses the use of a variety of sensor groups to include but not limited to guidance, tracking, power management,

drill/formation-fluid temperature, location and identification instrument packages, as well as a main control circuit (110) to process data transmitted by the different sensor group. See col. 2, lines 38-67, col. 11, lines 18-27, col. 14, lines 8-25, col. 17, line 13-col. 18, line 48.

In regards to Claim 21 Terry et al. discloses essentially all that is claimed, as put forth with respect to Claim 1 above, and further discloses the machine control system is further adapted to receive data signals from a remote location (30) the data signals being indicative of the depth and geographic location of the down hole tool, such that the control system automatically operates the drilling machine in response to the data signals received. See col. 15, lines 10-19, and col. 19, lines 11-45.

In regards to Claims 23, 25 Terry et al. discloses essentially all that is claimed, as put forth with respect to Claim 1 above, and further discloses the drive system is operative to axially move the drill string through the earth. Terry et al. further discloses a pipe lubrication assembly (20, 46) adapted to lubricate selected pipe joints. A pipe lubrication sensor group and pipe lubrication control circuitry (110) adapted to receive data from the pipe lubrication assembly sensor group and to automatically operate the pipe lubrication assembly. See col. 9, line 20-32, col. 11, line 62-col. 12, line 9, col. 14, lines 8-19.

In regards to Claims 24, 53, 54, 56 Terry et al. discloses a method for using a horizontal drilling machine having a plurality of automated functions. The method comprising the steps of:

Selecting a path (12) along which the underground tool is to be used.

Axially advancing the drill string so as to move the underground tool along at least a portion of the selected path, while automatically operating the automated functions of the drilling machine. Col. 14, lines 8-25, 54-col. 15, line 19.

In regards to Claims 53, 54, 56 Terry et al. discloses the method steps of:

Automatically controlling a power system (90) providing power necessary to axially advance the drill string.

Automatically providing drilling fluid to the underground tool (30) while axially advancing the drill string.

Automatically tracking the position of the underground tool (30) along the selected bore path.

See col. 7, lines 34-47, col. 9, lines 20-31, col. 10, line 63-col. 11, lin26, col. 11, line 66-col. 12, line 5, col. 13, lines 37-60, col. 14, lines 1-25.

In regards to Claims 28-31 Terry et al. discloses the main control circuit (110) automatically operates the fluid control function by sending at least one control signal to

the fluid dispensing assembly (20, 46) as well as the desirability to use flow rate, pressure and other drilling related sensors. See col. 2, lines 44-67, and col. 11, lines 18-26.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4-6, 26-27, 43-52, 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terry et al. # 6,296,066 in view of Jansson et al. # 5,996,710.

Terry et al. discloses essentially all that is claimed, to include the use of threaded pipe joints. What Terry et al. does not disclose is how the drill string sections are loaded into the drilling machine. However, Jansson et al. teaches a pipe handling system (1) comprising:

A pipe handling assembly (2) adapted to transport pipe section (8) to a connection area. A drill string length modification assembly (5, 16) adapted to make up and break out the drill string.

A pipe handling sensor group (6, 22, 23) comprising a pipe handling sensor group and a drill string length modification sensor group.

A drill string length modification circuitry (9) to receive data from the sensor group

(6, 22, 23) for automatically operating the drilling machine.

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to provide the horizontal drilling apparatus of Terry et al. with the pipe handling assembly, as taught by Jansson et al. in order to automate a drill string assembly process. See col. 1, line 41-col. 3, line 5.

In regards to Claims 26, 27 Terry et al. discloses essentially all that is claimed, except for how the drill string sections are loaded into the drilling machine.

However, Jansson et al. teaches a pipe handling system (1) comprising:

A pipe handling assembly (2) adapted to transport pipe section (8) to a connection area.  
A drill string length modification assembly (5, 16) adapted to make up and break out the drill string.

A pipe handling sensor group (6, 22, 23) comprising a pipe handling sensor group and a drill string length modification sensor group.

A drill string length modification circuitry (9) to receive data from the sensor group (6, 22, 23) for automatically operating the drilling machine.

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to provide the horizontal drilling apparatus of Terry et al. with the pipe handling assembly, as taught by Jansson et al. in order to automate a drill string assembly process. See col. 1, line 41-col. 3, line 5.

In regards to Claims 5, 6, 46, 47 Terry et al. discloses a pipe lubrication/fluid dispensing assembly (20, 46) adapted to lubricate selected pipe joints/ dispense a fluid through the drill string to the down hole tool. A pipe lubrication/fluid dispensing sensor group and pipe lubrication/fluid dispensing control circuitry (110) adapted to receive data from the pipe lubrication assembly sensor group and to automatically operate the pipe lubrication assembly. See col. 9, line 20-32, col. 11, line 62-col. 12, line 9, col. 14, lines 8-19, 38-53.

In regards to Claims 48-52 Terry et al. discloses the use of a variety of sensor groups to include but not limited to guidance, tracking, power management, drill/formation-fluid temperature, location and identification instrument packages, as well as a main control circuit (110) to process data transmitted by the different sensor group. See col. 2, lines 38-67, col. 11, lines 18-27, col. 14, lines 8-25, col. 17, line 13-col. 18, line 48.

In regards to Claim 55 Terry et al. discloses essentially all that is claimed, as put forth with respect to Claim 24 above, but does not disclose the method step used to extend a drill string as the drill string axially advances the underground tool. However, Jansson et al. teaches the method step of:

Displacing a drill string (4) axially, along a feed device (2) in order to automatically advance an underground tool. See col. 1, lines 41-67.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Devlugt et al. # 6,283,702 discloses a drill rod loader. Tenbusch, II # 6,039,505 discloses a technique for administering a lubricant in an underground pipe system. Stangl et al. # 4,907,658 discloses a mole-boring device with electronic transmitters. Mohn # 5,060,737 discloses a drilling system. Smith et al. # 3,942,594 discloses a drill pipe monitoring system. Kuckes # 5,923,170 discloses a method for near field guidance for a drill bit. Hill, III et al. # 5,193,628 discloses a method and apparatus for determining path orientation of a passageway. Pittard, Jr. et al. # 5,368,109 discloses an arcuate drilling apparatus. Deken # 5,390,750 discloses a down hole compaction and back reamer type drill bit. Hodges # 4,415,206 discloses a drill section. Mefford et al. # 5,048,793 discloses a pipe jack.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Addie whose telephone number is (703) 305-0135. The examiner can normally be reached on Mon-Fri from 6:30 am to 3:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas B. Will, can be reached on (703) 308-3870. The fax phone number for this Group is (703) 305-3597.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1113.



**Thomas B. Will**  
Supervisory Patent Examiner  
Group 3600

**RWA**  
**1/24/2002**